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**OVERHAUL/REBUILD
COST STUDY
ARMCOM ITEMS**



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TECHNICAL REPORT

MARCH 1975

**U.S. ARMY ARMAMENT COMMAND
COST ANALYSIS DIVISION
ROCK ISLAND, ILLINOIS**

Incl 4

OVERHAUL/REBUILD COST STUDY

ARMCOM ITEMS

HEADQUARTERS, US ARMY ARMAMENT COMMAND
COST ANALYSIS DIVISION
ROCK ISLAND, ILLINOIS

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ABSTRACT

Major item historical overhaul/rebuild data, depot labor rates and overhaul cost estimating relationships (CER's) are tabulated in sufficient detail to allow the estimation of overhaul/rebuild cost for ARMCOM-managed items. Item classes addressed in this study are:

1. Artillery
2. Fire control
3. Small arms

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INTRODUCTION

This study was performed by the Cost Analysis Division, Headquarters, U.S. Army Armament Command and was written to be useful for personnel knowledgeable in depot maintenance activities but also comprehensible to personnel not normally associated with depot maintenance. It covers the major end items for which ARMCOM has management responsibility, and represents a revised update of previous efforts in the depot overhaul area. The original study was done in November 1968 and an update of the original study was completed in July 1970 and November 1972. This study has as its primary purpose the further development and refinement of overhaul cost estimating methodology with a secondary purpose to develop a rebuild/overhaul cost data base on major items currently in the Army inventory.

Actual rebuild/overhaul costs were made available through annual Program Status Reports (PSR's) obtained from the Army Major Item Data Agency. Consideration has been given to periodic changes in fiscal codes as presented in AR 37-100-XX over the time frame for which data were collected. Data in this study are predicated only upon WAC Code A1 which is Depot Cyclic/Normal Overhaul/Rebuild defined in Appendix A.

SCOPE OF STUDY

The purpose of this study is to provide a sound basis for estimating overhaul/rebuild costs for ARMCOM items. Historical depot overhaul/rebuild depot cost data on each major item are summarized. Also, cost estimating relationships (CER's) are provided with which the depot overhaul/rebuild cost of items not previously overhauled can be estimated.

OVERHAUL COST ESTIMATING PROCEDURES

I. Major Items Previously Overhauled.

The following equation is to be used to estimate the unit total cost of overhaul in FY 75 dollars for a major item listed in Section II.

$$\text{ESTIMATE UNIT OVERHAUL COST} = \text{MH} \cdot (\text{TOTAL HOURLY RATE}) + \text{FP} + \text{UP}$$

Where MH: manhours based on manhour experience provided in Section II.

TOTAL HOURLY RATE: sum of the direct, indirect and G&A rates in FY 75 dollars displayed by depot in Section I.

FP: funded parts cost based on the historical weighted average funded parts cost in FY 75 dollars presented in Section II.

UP: unfunded parts cost based on the historical weighted average unfunded parts cost in FY 75 dollars presented in Section II.

EXAMPLE:

M105 Articulated Telescope FSN 1240-764-1667

It is assumed:

1. Manhours to overhaul will equal the historical weighted average of past experience presented in Section II.
2. Overhaul will take place at Letterkenny Depot.
3. Funded parts cost will be 25% less than the historical weighted average funded parts cost presented in Section II.
4. No unfunded parts cost.

$$\begin{aligned}\text{UNIT OVERHAUL COST} &= (18.29) \cdot (15.63) + (.75) \cdot (65.62) \\ &= 285.87 + 49.22 \\ &= \$335.09\end{aligned}$$

Manhour and parts cost data presented in Section II can be adjusted based on facts known by the estimator. For example, a lot of items requiring overhaul may be in such extremely poor condition that the parts cost presented in Section II is insufficient. Also three point overhaul/rebuild estimates can be generated by varying data in Section I and/or Section II.

II. Major Items Not Previously Overhauled.

To estimate the unit funded cost of overhaul in FY 75 dollars for a major item not listed in Section II, a cost estimating relationship (CER) from Section III may be utilized. After selecting the appropriate CER the funded unit overhaul cost is estimated by substituting into the CER the required independent variable value.

Example:

Straight telescope with a standard price of \$110.

ESTIMATED CONUS UNIT FUNDED OVERHAUL COST

$$A = 9.60079$$

$$B = .46119$$

$$X = 110$$

$$Y = AX^B$$

$$Y = 9.60079 (ALN(LN110 * .46119))$$

$$= 9.60079 (ALN (4.7004804 * .46119))$$

$$= 9.60079 (ALN (2.167815))$$

$$= 9.60079 (8.73916)$$

$$Y = 83.903$$

SECTION I

DEPOT OVERHAUL/REBUILD LABOR RATES

The chart on the following page represents the reported FY 75 labor rates of CONUS depots. The rates were provided by the US Army Major Item Data Agency.

FY 75 DEPOT LABOR AND INDIRECT CHARGES PER HOUR

ANNISTON	\$14.25
LETTERKENNY	\$15.63
PUEBLO	\$14.52
RED RIVER	\$14.06
TOOELE	\$14.43

SECTION 11

MAJOR ITEM OVERHAUL DATA

This section provides the following overhaul/rebuild data by major item:

1. Historical (FY 68 - 74) weighted average ^{1/} funded parts ^{2/} cost in FY 75 dollars.
2. Historical (FY 68 - 74) weighted average unfunded parts ^{2/} cost in FY 75 dollars.
3. Historical weighted average manhours.
4. Manhour experience range based on:
 - a. High weighted average manhour year.
 - b. Low weighted average manhour year.

The probable causes for variance in manhour experience are such factors as initial condition of item, quantity overhauled, etc. Data for major items are presented in FSN numerical sequence.

- ^{1/} The difference between weighted average and average is that the former puts greater emphasis on yearly quantities than does the latter.
- ^{2/} Definitions of funded and unfunded parts are presented in Appendix A.

FSN	NOMENCLATURE	UNIT WEIGHTED AVERAGE			MANHOUR		
		FUNDED	UNFUNDED	MANHOURS	EXPERIENCE RANGE		
		PARTS (75\$)	PARTS (75\$)		HIGH	LOW	
1	1005-072-5011	M14A1 Rifle 7.62 mm	80.42	26.58	2.00	3.05	1.75
2	1005-073-9421	M16A1 Rifle 5.56 mm	38.53	2.44	3.15	3.20	3.12
3	1005-214-0934	S&W Revolver Cal .38	1.92	.00	2.07	2.32	1.61
4	1005-317-2425	M36 Gun Mount	69.95	.00	12.85	14.41	12.11
5	1005-317-2427	M36A1 Gun Mount	52.44	.00	13.63	15.94	11.51
6	1005-317-2428	M36A2 Gun Mount	185.07	.00	15.06	19.88	14.00
7	1005-317-2442	M31C Pedestal Mount	51.72	.00	5.83	6.48	5.38
8	1005-322-9715	M2 Machine Gun Cal .50 HB	60.80	8.91	8.04	9.79	7.19
9	1005-322-9716	M3 Tripod Mount	40.73	.00	4.95	6.28	4.12
10	1005-322-9718	M2 Tripod Mount	15.87	.00	3.85	4.46	3.40
11	1005-322-9727	M24A3 Gun Mount	25.81	.00	4.00	4.00	4.00
12	1005-511-9042	M8C Spotting Rifle Cal .50	229.48	7.67	4.13	5.95	3.36
13	1005-589-1271	M14 Rifle 7.62 mm	18.14	2.89	1.71	1.97	1.34
14	1005-602-2105	M2 Machine Gun Cal .50 HB	98.05	.00	7.95	8.07	7.70
15	1005-605-7710	M60 Machine Gun 7.62 mm	84.67	15.92	5.95	6.42	5.67
16	1005-606-8412	M2 Machine Gun Cal .50	26.55	.00	7.29	11.00	4.86
17	1005-670-7670	M1 Carbine Cal .30	3.44	.82	.81	1.33	.50
18	1005-670-7675	M2 Carbine Cal .30	24.04	1.07	1.54	1.70	1.25
19	1005-672-1643	M1919A4 Machine Gun Cal .30	100.01	2.14	5.26	5.34	5.26
20	1005-672-1649	M1919A6 Machine Gun Cal .30	92.75	3.32	6.30	6.82	5.00

FSN	NOMENCLATURE	UNIT WEIGHTED AVERAGE			MANHOUR		
		FUNDED	UNFUNDED	MANHOURS	EXPERIENCE RANGE		
		PARTS (75\$)	PARTS (75\$)		HIGH	LOW	
21	1005-672-1771	M3A1 Submachine Gun Cal .45	6.56	.01	1.71	1.81	1.64
22	1005-673-4750	M55 Machine Gun Mount	868.17	400.49	230.90	266.58	205.38
23	1005-673-7965	M1911A1 Pistol Cal .45	7.22	.92	1.51	1.88	1.28
24	1005-674-1309	M1918A2 Rifle Cal .30	102.08	2.19	4.46	7.47	3.70
25	1005-674-1425	M1 Rifle Cal .30	21.35	1.35	1.46	1.71	1.71
26	1005-674-1431	USMID Sniper's Rifle Cal .30	65.99	5.31	3.93	3.97	3.63
27	1005-676-1643	MG Cal 30 BNG M1919A	35.78	.00	5.52	6.67	5.16
28	1005-678-9828	M14NM Rifle 7.62 mm	114.60	.00	4.25	9.12	3.11
29	1005-690-2790	M85 Machine Gun	414.41	95.13	10.07	10.20	7.50
30	1005-693-4854	M2 Machine Gun Cal .50	93.96	21.66	9.11	10.03	6.86
31	1005-704-6650	Machine Gun Mount	3.80	.00	4.89	5.06	3.91
32	1005-710-5599	M122 Tripod Mount	39.69	.00	4.19	5.00	3.19
33	1005-711-5031	M49 Ring Mount	9.07	.00	9.08	10.53	9.06
34	1005-713-9873	MG M60	208.32	.00	5.50	5.50	5.50
35	1005-716-2946	M37 Machine Gun Cal .30	38.25	.00	7.00	7.00	7.00
36	1005-726-5636	M2 Machine Gun Cal .50 HB	92.91	29.18	8.06	9.34	7.68
37	1005-726-5687	Revolver Cal .38	1.21	5.18	2.12	2.20	1.81
38	1005-726-5786	Revolver Cal .38	2.30	.00	1.78	2.20	1.73
39	1005-736-4875	AA Mount Machine Gun	105.77	.00	11.54	13.64	10.04
40	1005-834-6119	AA Mount Machine Gun	139.65	.00	8.86	9.11	6.00

FSN	NOMENCLATURE	UNIT WEIGHTED AVERAGE			MANHOUR		
		FUNDED	UNFUNDED	MANHOURS	EXPERIENCE RANGE		
		PARTS (75\$)	PARTS (75\$)		HIGH	LOW	
41	1005-836-7286	Machine Gun Mount	12.77	.00	8.68	9.45	6.76
42	1005-840-3758	M13 Rifle Cal .22	11.72	.09	2.04	2.11	1.98
43	1005-854-4463	M142 Mount Machine Gun	9.68	.00	4.52	6.62	3.75
44	1005-856-6885	Rifle M16	15.05	3.62	2.98	2.99	2.96
45	1005-869-8816	M73 Machine Gun 7.62 mm	255.80	38.26	12.19	13.82	10.76
46	1005-890-2610	M66 Ring Mount	35.51	.00	20.75	20.75	20.75
47	1005-953-9073	M2 Armament Subsystem	650.95	165.61	25.27	25.27	25.27
48	1005-957-3893	M2 Machine Gun Cal .50	57.91	12.26	6.25	6.25	6.25
49	1005-973-0375	M60C Machine Gun 7.62 mm	88.11	58.74	4.64	6.17	4.10
50	1005-999-8194	M27 Armament Subsystem	6487.64	.00	36.55	36.55	36.55
51	1010-322-9737	M18 Recoilless Rifle 57 mm	63.33	25.72	19.17	20.29	18.54
52	1010-322-9739	M18A1 Recoilless Rifle 57 mm	26.58	31.51	19.12	19.58	18.70
53	1010-673-2006	M2 Mortar 60 mm	35.69	.00	13.30	15.03	12.18
54	1010-673-2010	M19 Mortar 60 mm	29.12	.00	10.62	15.04	10.02
55	1010-691-1382	M79 Grenade Launcher	36.27	.00	4.70	4.70	4.70
56	1015-073-5367	M37 Recoil Mechanism	875.18	.87	94.87	112.74	88.71
57	1015-086-8164	M102 Howitzer 105 mm	57.32	45.21	227.06	276.67	184.45
58	1015-099-8248	M2A5 Recoil Mechanism	380.22	.14	93.76	108.22	70.83
59	1015-099-8249	M2A4 Recoil Mechanism	421.47	6.13	91.35	140.66	71.29
60	1015-133-8484	M40A2 Recoilless Rifle 106 mm	379.81	.00	50.48	52.42	47.53

FSN	NOMENCLATURE	UNIT WEIGHTED AVERAGE			MANHOUR		
		FUNDED	UNFUNDED		EXPERIENCE	RANGE	
		PARTS (75\$)	PARTS (75\$)	MANHOURS	HIGH	LOW	
61	1015-322-9720	M30 Mortar 107 mm	219.11	.00	26.35	33.21	22.77
62	1015-322-9742	M27A1 105 mm Howitzer	35.52	.00	106.00	106.00	106.00
63	1015-322-9752	M101A1 Howitzer 105 mm	1806.77	1304.80	255.76	282.70	185.57
64	1015-348-4923	M40A1 Recoilless Rifle	219.32	91.63	47.19	51.36	38.38
65	1015-505-5285	Equilibrator	362.27	.00	359.54	554.54	100.34
66	1015-511-9124	M92 Recoilless Rifle Mount	279.12	.00	28.20	28.25	28.00
67	1015-657-7534	M67 Recoilless Rifle 90 mm	27.60	.00	18.12	18.53	17.12
68	1015-691-1289	M20 Recoilless Rifle 75 mm	149.44	96.68	14.85	20.02	13.82
69	1015-714-1822	M1A6 Recoil Mechanism	173.05	.00	71.44	71.44	71.44
70	1015-736-3974	M87 Gun Mount	216.05	.00	35.33	35.33	35.33
71	1015-840-1836	M29 Mortar 81 mm	269.61	10.60	20.73	29.69	17.94
72	1025-050-8922	Equilibrator	381.31	.00	37.37	44.11	30.15
73	1025-322-9755	M114 Howitzer 155 mm	5030.87	2176.35	312.25	505.06	238.95
74	1025-322-9768	M114A1 Howitzer 155 mm	5945.93	2773.54	283.24	335.77	225.59
75	1025-653-7593	Equilibrator	99.71	.00	6.27	7.50	5.61
76	1025-713-3221	Equilibrator	4.56	.00	40.12	40.36	28.00
77	1025-714-8074	M6A2 Recoil Mechanism	987.41	17.27	173.32	192.53	172.33
78	1025-863-5613	M158 Mount Assembly	3034.66	.00	200.39	231.70	136.46
79	1025-994-8931	M123A1 Howitzer 155 mm	4242.10	.00	226.83	247.49	199.97
80	1030-322-9788	M115 Howitzer 8 in	4646.84	2806.04	454.15	511.67	395.86

FSN	NOMENCLATURE	UNIT WEIGHTED AVERAGE			MANHOUR	
		FUNDED	UNFUNDED	MANHOURS	EXPERIENCE RANGE	
		PARTS (75\$)	PARTS (75\$)		HIGH	LOW
81	1030-714-1826	M4A1 Recoil Mechanism	1201.24	.00	145.46	145.46
82	1055-840-1842	M20A1E1 Rocket Launcher 3.5 in	82.50	.02	6.61	6.81
83	1090-933-6701	M28 Armament Subsystem	13354.06	12858.46	230.97	230.97
84	1220-344-4678	M13 Ballistic Computer	69.04	1.45	36.14	37.08
85	1220-448-0131	M18 Gun Computer	981.36	183.85	448.76	609.00
86	1220-546-9735	M13A1 Ballistic Computer	44.48	1.30	29.35	34.63
87	1220-572-8738	M16 Computer	346.56	.00	40.00	40.00
88	1220-676-2182	M13A1D Ballistic Computer	182.45	.22	35.71	48.64
89	1220-766-5137	M38 Sight Computer	145.48	21.60	36.31	46.03
90	1220-766-5139	Computer Assembly	53.17	1.70	32.82	47.56
91	1220-774-9445	M13A1C Ballistic Computer	39.42	5.72	30.22	33.25
92	1220-856-9454	M13A2 Ballistic Computer	81.34	12.94	41.48	50.00
93	1220-870-6274	M13B1C Ballistic Computer	83.47	1.95	27.80	36.85
94	1240-056-4854	Infinity Sight	10.52	.00	7.75	9.06
95	1240-076-0066	M113 Panoramic Telescope	265.89	.00	38.01	106.00
96	1240-300-6601	M101 Telescope	123.92	.00	28.91	32.73
97	1240-300-7989	M34A2 Sight Unit	43.68	.00	13.10	15.86
98	1240-344-4632	M12A7K Panoramic Telescope	89.07	.00	14.36	18.00
99	1240-344-4633	M12A7H Panoramic Telescope	31.85	.00	13.77	17.60
100	1240-344-4644	M23 Periscope	12.17	.00	5.27	6.00

FSN	NOMENCLATURE	UNIT WEIGHTED AVERAGE			MANHOUR		
		FUNDED	UNFUNDED	MANHOURS	EXPERIENCE RANGE		
		PARTS (75\$)	PARTS (75\$)		HIGH	LOW	
101	1240-344-4645	M20A1 Periscope	79.76	68.28	9.79	11.86	8.52
102	1240-344-4646	M97C Telescope	16.34	.00	12.33	15.14	8.64
103	1240-344-4654	M13 Range Finder	221.40	.00	68.87	72.66	64.75
104	1240-344-4668	M100 Panoramic Telescope	152.20	.08	37.37	43.85	31.95
105	1240-344-4672	M93 Telescope	109.33	.00	27.78	29.34	24.39
106	1240-344-4674	M99C Telescope	105.62	.00	37.00	39.07	34.77
107	1240-344-4680	Mount, Periscope M104A	4.66	.00	2.00	2.00	2.00
108	1240-346-8735	M28 Sight Periscope	31.58	.00	10.21	10.36	9.84
109	1240-360-1593	M97 Telescope	42.76	.84	12.81	15.00	11.45
110	1240-530-0974	Binocular M17A1	25.67	.00	10.00	10.00	10.00
111	1240-546-6339	M92D Telescope	11.95	.00	4.80	5.68	3.60
112	1240-546-9580	M20A3 Periscope	74.55	36.43	10.65	11.63	8.56
113	1240-565-1091	M104	4.66	.00	2.00	2.00	2.00
114	1240-601-4065	M90F Telescope	46.96	.00	5.47	5.47	5.00
115	1240-608-2062	M13A1 Range Finder	531.74	22.62	73.65	73.91	64.35
116	1240-554-3811	M15 Tripod Mount	1.02	.00	2.12	2.12	2.12
117	1240-657-4387	M17 Tripod Mount	9.70	.00	5.92	7.02	5.59
118	1240-670-2508	Binocular M134A1	25.11	.00	7.92	8.50	7.50
119	1240-670-2191	Binocular M3	30.75	.00	8.00	8.00	8.00
120	1240-676-2173	M17C Range Finder	319.93	.31	91.70	118.00	62.00

FSN	NOMENCLATURE	UNIT WEIGHTED AVERAGE			MANHOUR	
		FUNDED	UNFUNDED	MANHOURS	EXPERIENCE RANGE	
		PARTS (75\$)	PARTS (75\$)		HIGH	LOW
1240-676-2174	M31 Periscope	91.77	.58	20.26	26.12	16.83
1240-676-2178	M105C Telescope	144.64	.00	24.93	25.00	24.00
1240-676-2181	M44C Sight, Infinity	6.04	.00	4.79	5.61	4.00
1240-678-5577	Periscope BC M65	379.42	.00	59.00	59.00	59.00
1240-690-8811	Sight Bore	13.47	.00	3.00	3.00	3.00
1240-706-0794	M28C, Periscope	41.70	.00	10.30	10.84	9.99
1240-716-2947	Sight Reflecting	12.18	.00	1.44	2.50	.84
1240-732-1470	M97G Telescope	77.45	.00	10.00	10.00	10.00
1240-732-1469	M97H Telescope	41.39	.00	11.79	13.80	10.84
1240-757-8596	Mount, Telescope	144.65	.00	15.72	18.00	13.00
1240-757-8441	Mount, Telescope	9.55	.00	4.00	4.00	4.00
1240-757-9927	M4 Sight	6.65	.00	4.16	4.90	3.59
1240-757-9933	M1 Panoramic Telescope	20.70	.00	8.94	8.92	8.62
1240-757-9935	M12 Panoramic Telescope	40.93	.00	16.00	17.35	12.38
1240-757-9975	M62 Elbow Telescope	11.30	.00	4.51	5.14	2.47
1240-758-2078	Mount, Telescope	81.03	.00	18.00	18.00	18.00
1240-759-7757	M15A1 Periscope	103.23	.00	16.56	19.48	16.30
1240-759-7774	M84 Telescope	4.54	.00	3.58	3.75	3.14
1240-759-7781	M16A1D Elbow Telescope	27.16	.08	5.65	6.30	4.50
1240-759-7782	M16A1F Elbow Telescope	10.86	.00	6.81	8.40	6.52

FSN	NOMENCLATURE	UNIT WEIGHTED AVERAGE			MANHOUR	
		FUNDED PARTS (75\$)	UNFUNDED PARTS (75\$)	MANHOURS	EXPERIENCE RANGE HIGH	LOW
1240-759-7783	M16A1G Elbow Telescope	7.54	.00	5.61	6.09	4.96
1240-759-7852	M86F Telescope	17.42	.00	6.07	7.87	5.00
1240-759-7853	M90D Telescope	19.57	.00	5.83	6.82	1.74
1240-759-7854	M34 Sight Unit	39.72	.00	12.57	14.52	11.92
1240-762-9333	M19 Articulated Telescope	26.77	9.54	22.75	22.75	22.75
1240-764-1667	M105 Articulated Telescope	65.62	.04	18.29	26.68	16.86
1240-764-7931	M34A1 Sight Unit	44.93	.00	11.63	13.05	10.96
1240-764-8288	M24C Sight Unit	53.46	.00	4.88	6.00	3.86
1240-764-8432	M90C Telescope	5.48	.00	5.91	5.91	5.91
1240-765-2161	Mount, Periscope T17	.00	.00	9.54	9.54	9.54
1240-768-7260	M12A7C Panoramic Telescope	32.35	.00	13.79	15.02	10.73
1240-768-7261	M12A7D Panoramic Telescope	59.95	.09	14.58	17.18	11.42
1240-777-6776	Mount, Periscope M104A2	5.78	.00	2.37	3.00	2.00
1240-768-7263	M12A7F Panoramic Telescope	23.47	.00	12.00	12.00	12.00
1240-788-0629	Periscope, Tank	177.60	.00	37.00	37.00	37.00
1240-788-1236	M103 Telescope	25.52	.00	4.26	4.47	4.12
1240-792-9068	Periscope, Tank	203.04	88.06	32.50	32.50	32.50
1240-819-4519	M118 Elbow Telescope	117.98	.00	33.55	37.85	19.25
1240-819-4520	M118C Elbow Telescope	104.23	.00	36.02	39.89	34.69
1240-823-5613	Mount, Telescope	.00	.00	8.00	8.00	8.00

FSN	NOMENCLATURE	UNIT WEIGHTED AVERAGE			MANHOUR	
		FUNDED	UNFUNDED		EXPERIENCE	RANGE
		PARTS (75\$)	PARTS (75\$)	MANHOURS	HIGH	LOW
161	1240-826-1167	Mount, Periscope M102A1	.00	.00	6.00	6.00
162	1240-824-3467	M62A1C Elbow Telescope	18.71	.00	3.58	5.00
163	1240-863-5642	M17B1C Range Finder	1562.29	219.45	114.76	159.70
164	1240-864-2930	M117 Panoramic Telescope	141.67	15.88	40.18	48.75
165	1240-864-2933	M42 Periscope	1.72	.00	4.00	4.38
166	1240-875-7933	M17A1 Range Finder	347.15	15.30	83.76	96.83
167	1240-886-5888	M92F Elbow Telescope	13.91	10.76	5.43	6.54
168	1240-895-6492	Mount, Telescope	65.17	.00	32.80	32.80
169	1240-895-9186	M115 Panoramic Telescope	342.81	.00	38.94	46.00
170	1240-896-2240	Mount, Telescope XM1	.00	.00	5.12	5.12
171	1240-898-6787	M116 Elbow Telescope	52.17	.00	5.52	6.84
172	1240-898-6789	M116C Elbow Telescope	36.92	.00	6.59	10.00
173	1240-917-6428	M12A7Q Panoramic Telescope	36.61	3.80	12.09	14.19
174	1240-917-6433	M12A7S Panoramic Telescope	44.26	.14	14.40	17.66
175	1240-924-5785	M103A1 Telescope	29.75	.25	4.80	5.12
176	1240-933-5630	XM44E1 Periscope	494.73	358.61	58.20	58.20
177	1240-963-0839	M114 Elbow Telescope	380.92	.00	20.74	100.00
178	1240-974-6432	M116F Elbow Telescope	26.49	7.41	5.55	6.00
179	1240-974-6433	M116D Elbow Telescope	12.93	.00	6.00	6.00
180	1240-977-5586	M24 Range Finder	124.78	.00	159.00	159.00

FSN	NOMENCLATURE	UNIT WEIGHTED AVERAGE			MANHOUR		
		FUNDED	UNFUNDED	MANHOURS	EXPERIENCE	RANGE	
		PARTS (75\$)	PARTS (75\$)		HIGH	LOW	
181	1240-980-1745	M105D Articulate Telescope	72.91	10.25	20.35	26.09	16.40
182	1240-980-9288	M32 Periscope	160.25	25.09	26.33	43.17	12.59
183	1240-980-9290	M34 Periscope	217.35	.00	34.59	40.50	28.00
184	1240-980-9291	M36 Periscope	316.06	3.50	36.33	37.67	36.17
185	1240-990-1851	M28D Periscope	20.93	.00	10.79	10.79	10.79
186	1290-346-8184	M24 Tripod Mount	5.28	.00	2.99	3.65	2.05
187	1290-614-0008	Aiming Circle M2	32.33	.00	25.00	25.00	25.00
188	1290-652-8560	M5 Tripod Mount	.00	.00	4.21	5.12	1.10
189	1290-671-6145	Aim Circle M1	69.14	.00	20.00	20.00	20.00
190	6650-344-4647	M24 Periscope	96.18	.02	11.72	13.26	10.83
191	6650-530-0959	M15A1 Binocular	4.28	.00	7.49	7.49	7.49
192	6650-530-0960	M49 Observation Telescope	10.77	.00	4.65	5.85	4.29
193	6650-530-0973	M13A1 Binocular	20.29	.00	7.25	7.50	7.06
194	6650-530-0974	M17A1 Binocular	19.59	.00	7.11	7.33	6.90
195	6650-670-2491	M3 Binocular	22.15	.02	7.51	9.31	6.04
196	6650-670-2508	M13 Binocular	35.70	.00	9.41	9.48	7.56
197	6650-670-2514	M16 Binocular	15.29	.04	6.90	8.75	5.26
198	6650-678-5577	M65 BC Telescope	89.17	.00	24.66	32.69	20.46
199	6650-762-9336	XM48 Periscope	310.80	3.48	16.05	19.73	14.70
200	6650-765-2971	M19 Periscope	85.73	.00	11.80	12.64	10.02

	FSN	NOMENCLATURE	UNIT WEIGHTED AVERAGE			MANHOUR	
			FUNDED	UNFUNDED		EXPERIENCE RANGE	
			PARTS (75\$)	PARTS (75\$)	MANHOURS	HIGH	LOW
201	6650-788-5464	XM47 Periscope	295.00	3.02	5.37	8.78	4.72
202	6650-863-5657	M18 Infrared Binocular	163.77	1.81	20.50	25.57	14.60

SECTION III

COST ESTIMATING RELATIONSHIPS (CER'S)

The CER's presented in this section are statistically derived expressions relating depot unit overhaul cost in FY 75 dollars (the dependent variable) to an independent variable. The independent variables are characteristics regarded as cost drivers. These characteristics are usually physical or performance in nature with the exception of standard price which is defined in Appendix A. Cost estimates are obtained from the CER's by substituting the values of the independent variables in the expression and solving the expression for the dependent variable.

The CER's were derived by evaluating potential cost drivers as candidate independent variables. Consideration was given to the restraint that the independent variables must be known at the time of the cost estimate is made. Major item overhaul costs used as dependent variable values were determined by multiplying the item unit weighted average manhours found in Section II by \$14.58 (composite FY 75 CONUS depot rate) and adding the item unit weighted average funded parts cost found in Section II. After collecting historical data on the independent and dependent variables, CER's were developed based on standard regression analysis theory. After performing the Regression analyses, correlation analysis was used to select valid CER's.

The following statistics are presented with each of the CER's in this section. These statistics follow from the correlation analysis and give an indication of how well the CER explains the

relationship between the independent and dependent variables.

1. Coefficient of Determination. This number indicates the percentage of total variation of the dependent variable that is explained by the regression. The value falls within the range of 0 (no correlation among the variables) to 1 (perfect correlation).

2. Coefficient of Variation. The coefficient of variation is a relative measure of the ratio of the standard error of estimate to the mean of the actual dependent variable values. The ratio is most useful for comparing the relative worth of different regressions. As a rule of thumb, a good regression should have a coefficient of variation of 0.20 or less.

Limitations. In general, CER's are most useful for estimating costs in the early stages of weapon system development. They may be used later in the life cycle as a validation of or complement to other cost estimating methods. For estimating costs with very close historical counterparts, the analogy method of cost estimating is probably more accurate. Caution should be used in estimating costs of weapon systems which represent major technological advances since the data upon which the CER's are based may be irrelevant to the new weapon systems. Finally, of course, the CER's should not be used for estimating costs when an independent variable value diverges from the range of the data upon which CER's are based.

Y AXIS
OVERHAUL COST

CAL 30 RIFLES

442.000 + Cal 30 Rifles Input Data

X VALUE	Y VALUE	ITEM
138.0000	43.0700	M14
94.3000	42.6400	M1
206.0000	109.5800	M14A1
275.0000	123.2900	M1D
265.0000	167.1100	M1918A2

$Y = AX^B$

A = .10097
B = 1.29277

COEFFICIENT OF DETERMINATION: .87461
COEFFICIENT OF VARIATION: .05832

353.600 +

309.400 +

265.200 +

221.000 +

176.800 +

132.600 +

88.400 +

44.200 +

60.000 120.000 180.000 240.000 300.000 360.000 4

REVOLVERS AND PISTOLS

Revolvers and pistols were grouped together because small parts and complexity of these would exhibit similar costs. Due to the small range of unit overhaul costs exhibited by revolvers and pistols no CER is developed. Therefore, the unit overhaul costs are best stated as having the mean value of \$30.43 in FY 75 dollars.

<u>Item</u>	<u>Unit Overhaul Cost</u>
Revolver Cal. 38 (FSN 1005-214-0934)	\$32.10
Revolver Cal. 38 (FSN 1005-726-5687)	32.12
Revolver Cal. 38 (FSN 1005-726-5786)	28.25
M1911A1 Pistol Cal. 45 1005-673-7965	29.24

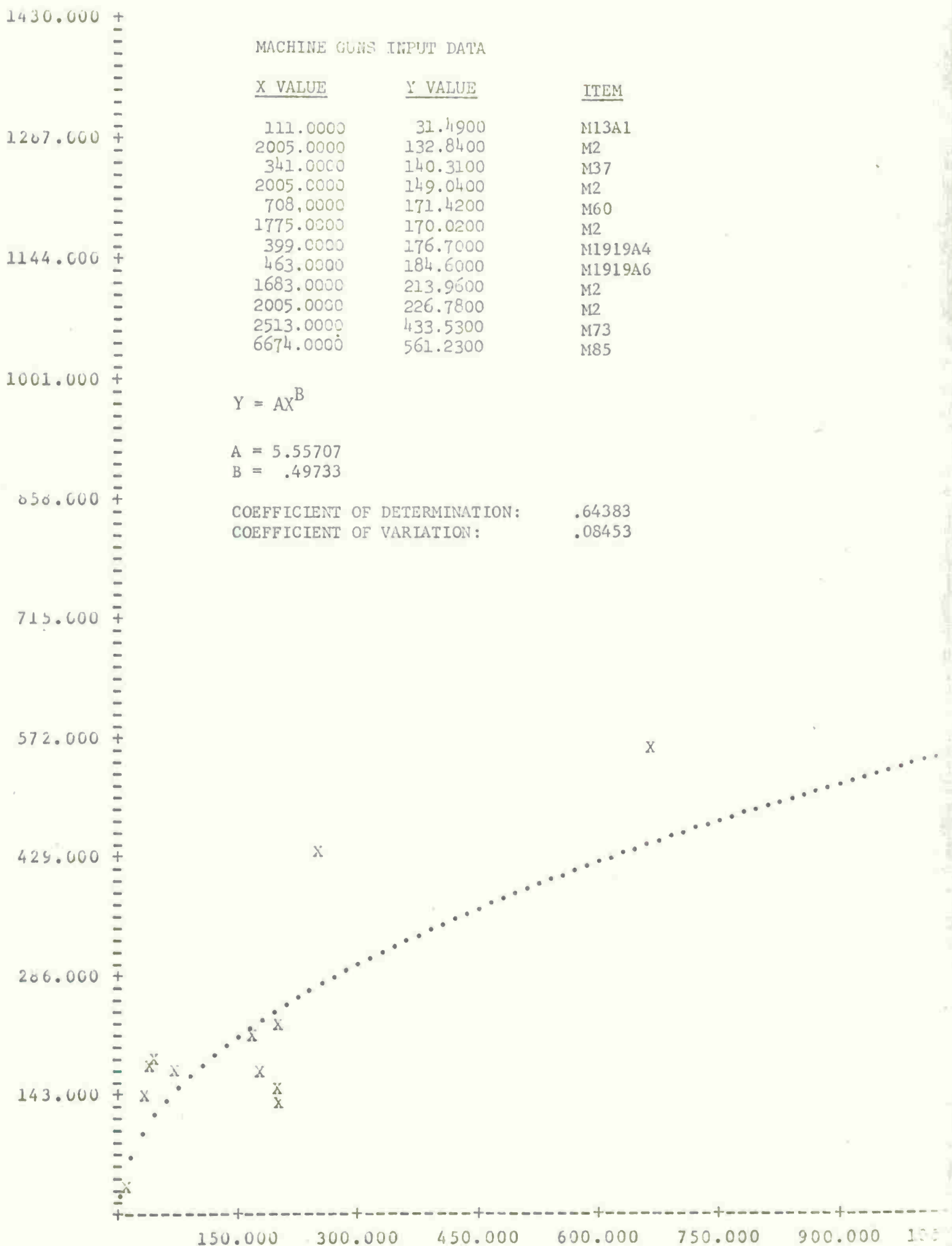
<u>X VALUE</u>	<u>Y VALUE</u>	<u>ITEM</u>
111.0000	31.4900	M13A1
2005.0000	132.8400	M2
341.0000	140.3100	M37
2005.0000	149.0400	M2
708.0000	171.4200	M60
1775.0000	170.0200	M2
399.0000	176.7000	M1919A4
463.0000	184.6000	M1919A6
1683.0000	213.9600	M2
2005.0000	226.7800	M2
2513.0000	433.5300	M73
6674.0000	561.2300	M85

$$Y = AX^B$$

$$A = 5.55707$$

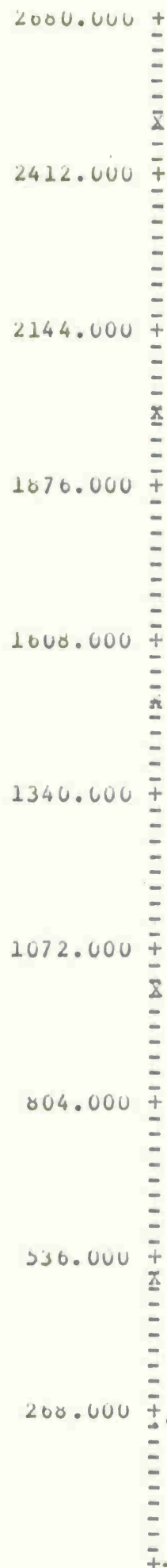
$$B = .49733$$

COEFFICIENT OF DETERMINATION: .64383
COEFFICIENT OF VARIATION: .08453



Y AXIS
OVERHAUL COST

RECOILLESS RIFLES



RECOILLESS RIFLES INPUT DATA

<u>X VALUE</u>	<u>Y VALUE</u>	<u>ITEM</u>
35.0000	291.7900	M67
40.2500	305.3500	M18A1
40.2500	342.8300	M18
114.5000	365.9500	M20
251.0000	907.3500	M40A1
251.0000	1115.8100	M40A2

$LN Y = A + BX$

A = 5.48471
B = .00554

COEFFICIENT OF DETERMINATION: .94972
COEFFICIENT OF VARIATION: .02410



X AXIS
WEIGHT

Y AXIS
OVERHAUL COST

MORTARS

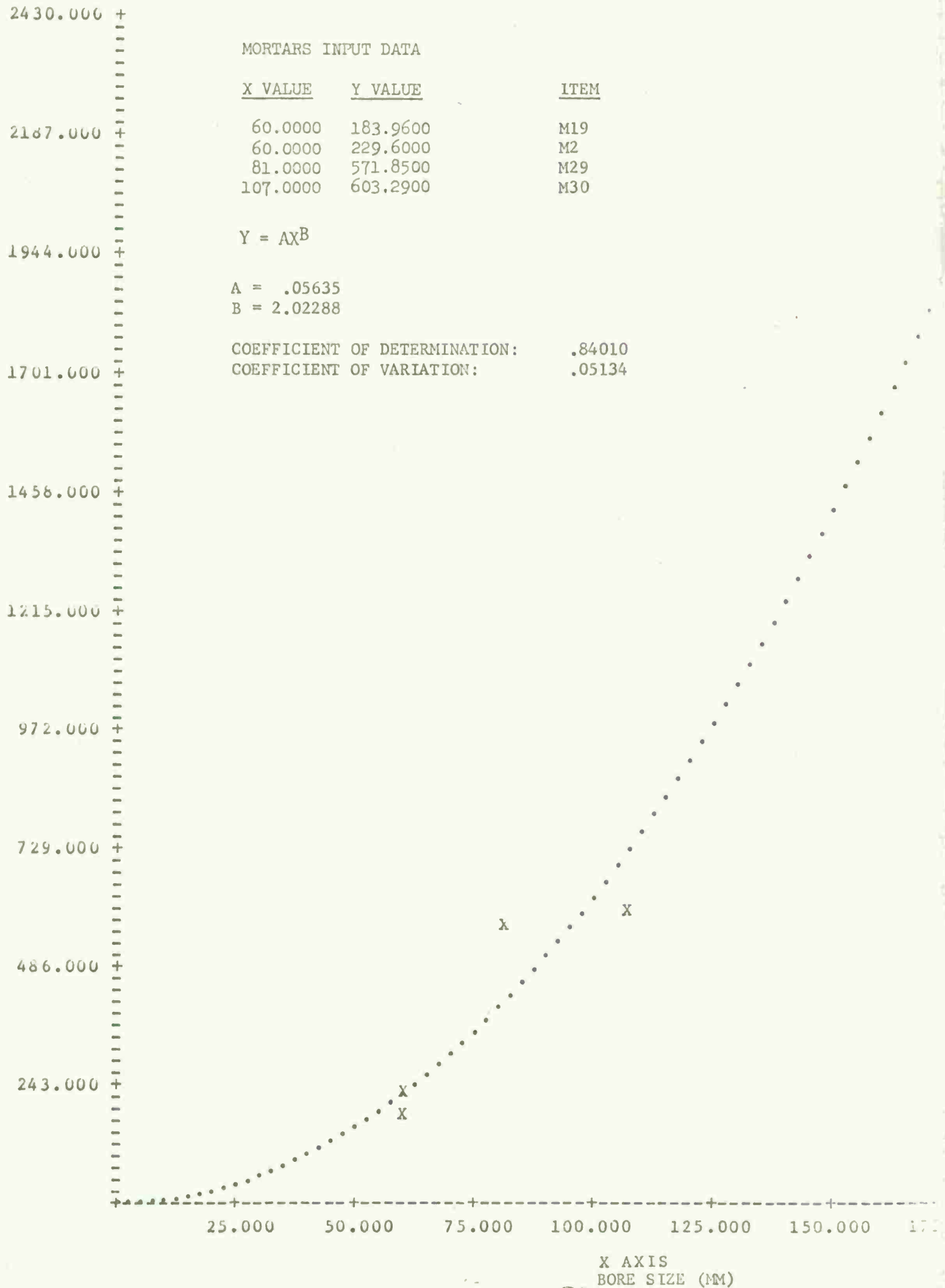
MORTARS INPUT DATA

<u>X VALUE</u>	<u>Y VALUE</u>	<u>ITEM</u>
60.0000	183.9600	M19
60.0000	229.6000	M2
81.0000	571.8500	M29
107.0000	603.2900	M30

$$Y = AX^B$$

A = .05635
B = 2.02288

COEFFICIENT OF DETERMINATION: .84010
COEFFICIENT OF VARIATION: .05134



Y AXIS
(10)
ACTUAL COST

RECOIL MECHANISMS

1560.000 +

RECOIL MECHANISMS INPUT DATA

1404.000 +

<u>X VALUE</u>	<u>Y VALUE</u>	<u>ITEM</u>
1550.0000	1753.3500	M2A4
1526.0000	1747.2400	M2A5
1621.0000	2258.3800	M37
1850.0000	3509.7500	M6A2
1949.0000	3322.0500	M4A1

1248.000 +

$$Y = AX^B$$

$$A = .0000006$$

$$B = 2.96621$$

1092.000 +

COEFFICIENT OF DETERMINATION: .93485
COEFFICIENT OF VARIATION: .01274

936.000 +

760.000 +

624.000 +

468.000 +

312.000 +

156.000 +

400.000 800.000 1200.000 1600.000 2000.000 2400.000 2800.000

X AXIS
MUZZLE VELOCITY

Y AXIS
(10)
OVERHAUL COST

TOWED HOWITZERS

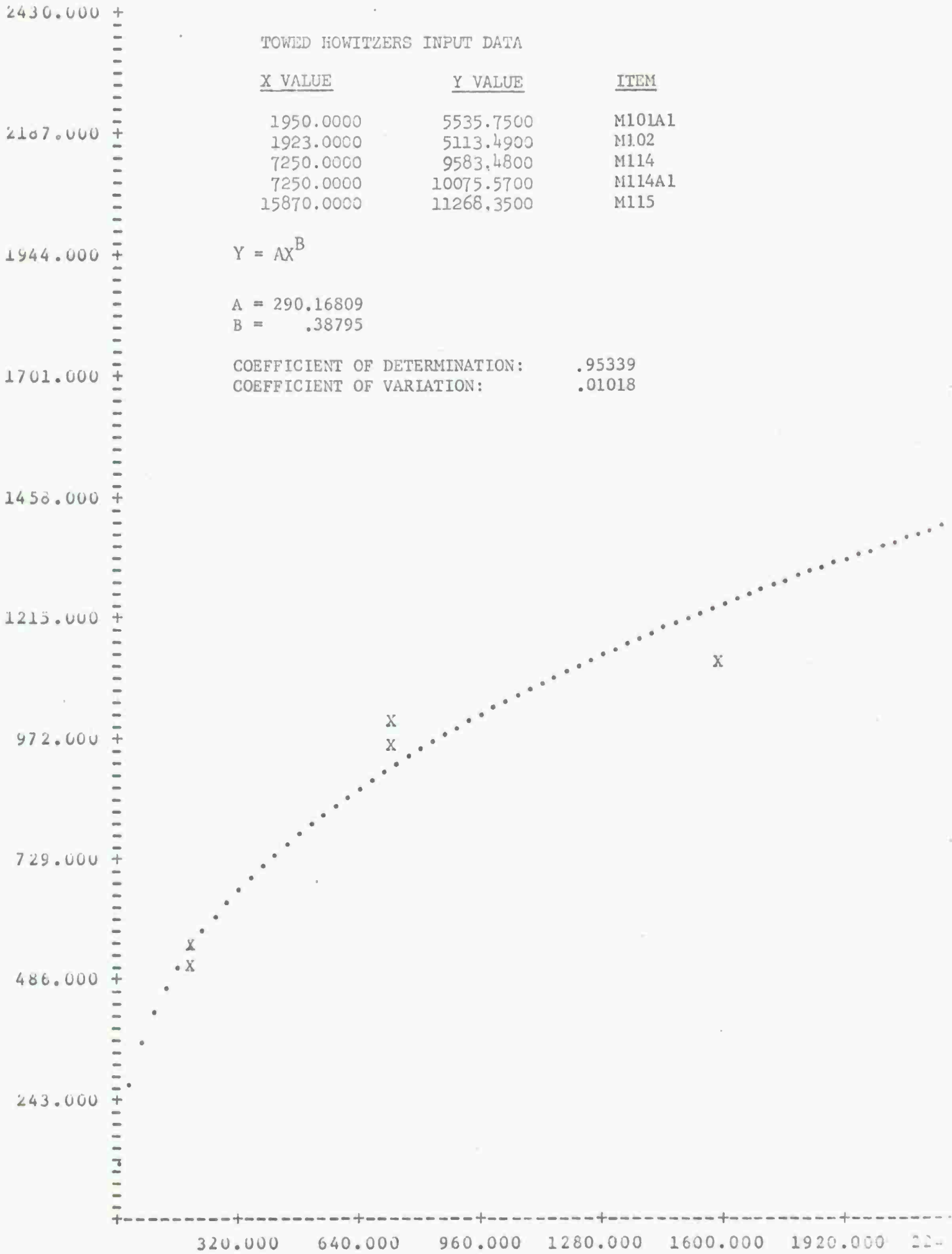
TOWED HOWITZERS INPUT DATA

<u>X VALUE</u>	<u>Y VALUE</u>	<u>ITEM</u>
1950.0000	5535.7500	M101A1
1923.0000	5113.4900	M102
7250.0000	9583.4800	M114
7250.0000	10075.5700	M114A1
15870.0000	11268.3500	M115

$Y = AX^B$

A = 290.16809
B = .38795

COEFFICIENT OF DETERMINATION: .95339
COEFFICIENT OF VARIATION: .01018



X AXIS
(10)
APPLIED MOMENTUM (LBS-SEC)

Y AXIS
OVERHAUL COST

STRAIGHT TELESCOPES

452.000 +

STRAIGHT TELESCOPES INPUT DATA

	ITEM	X VALUE	Y VALUE
406.800 +	M84	70.4400	56.7400
	M49	153.0000	78.5700
	M90C	107.0000	91.6500
	M103A1	118.0000	99.7300
	M86F	632.0000	105.9200
	M90D	208.0000	104.5700
361.600 +	M90F	380.0000	126.7100
	M97C	286.0000	196.1100
	M97H	468.0000	213.2900
	M97	514.0000	229.5300

316.400 +

$$Y = AX^B$$

$$A = 9.60079$$

$$B = .46119$$

271.200 +

COEFFICIENT OF DETERMINATION: .57584

COEFFICIENT OF VARIATION: .06604

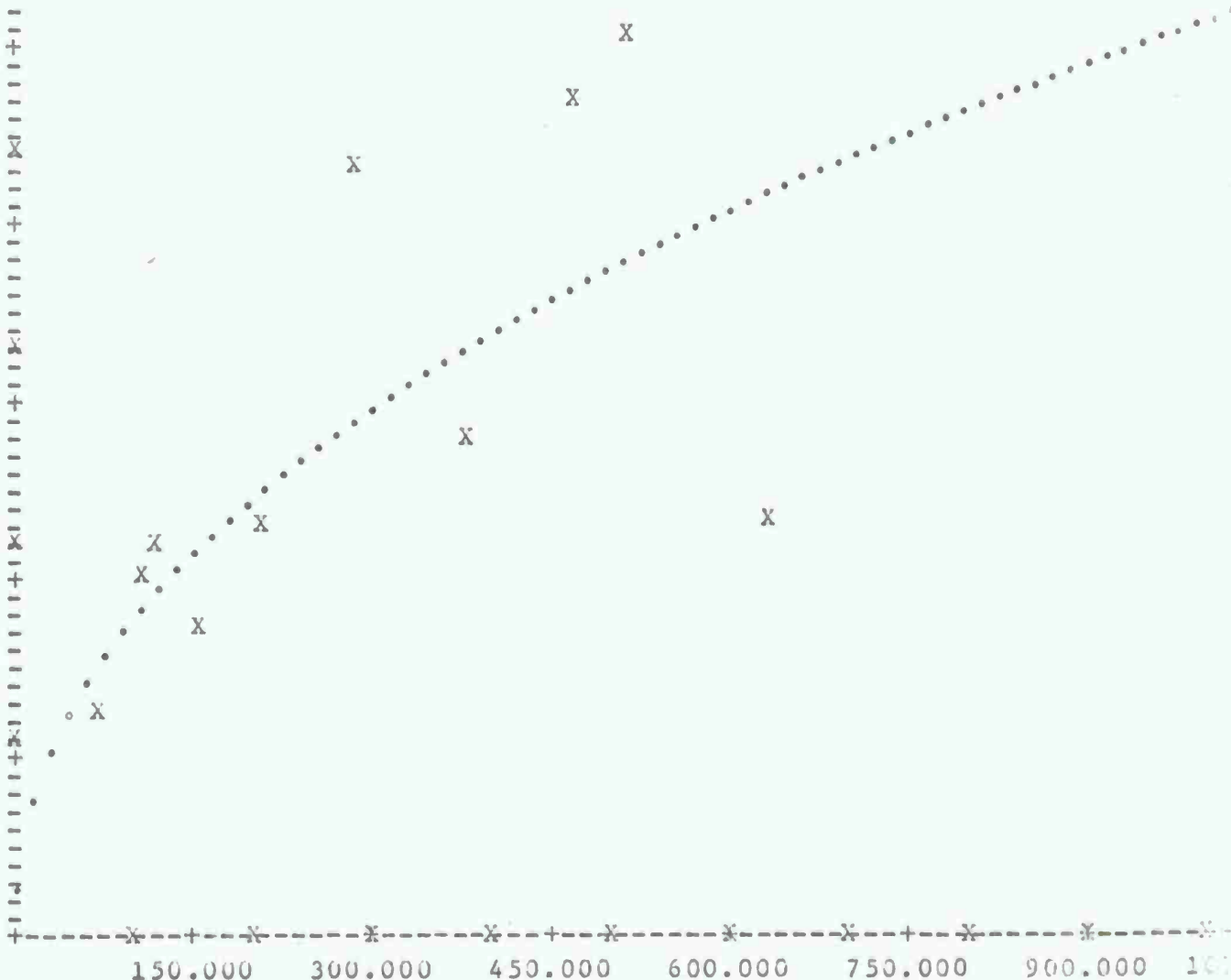
226.000 +

180.800 +

135.600 +

90.400 +

45.200 +



X AXIS
STANDARD PRICE

Y AXIS
OVERHAUL COST

TANK PERISCOPES

TANK PERISCOPES INPUT DATA

<u>X VALUE</u>	<u>Y VALUE</u>	<u>ITEM</u>
152.0000	60.0400	M42
291.0000	89.0100	M23
327.0000	180.4400	M28
398.0000	178.2500	M28D
398.0000	191.8700	M28C
725.0000	267.0600	M24
632.0000	344.6700	M15A1
823.0000	387.1600	M31
1779.0000	721.6700	M34
2320.0000	544.1400	M32
3326.0000	845.7500	M36
5600.0000	1343.2900	XM44E1

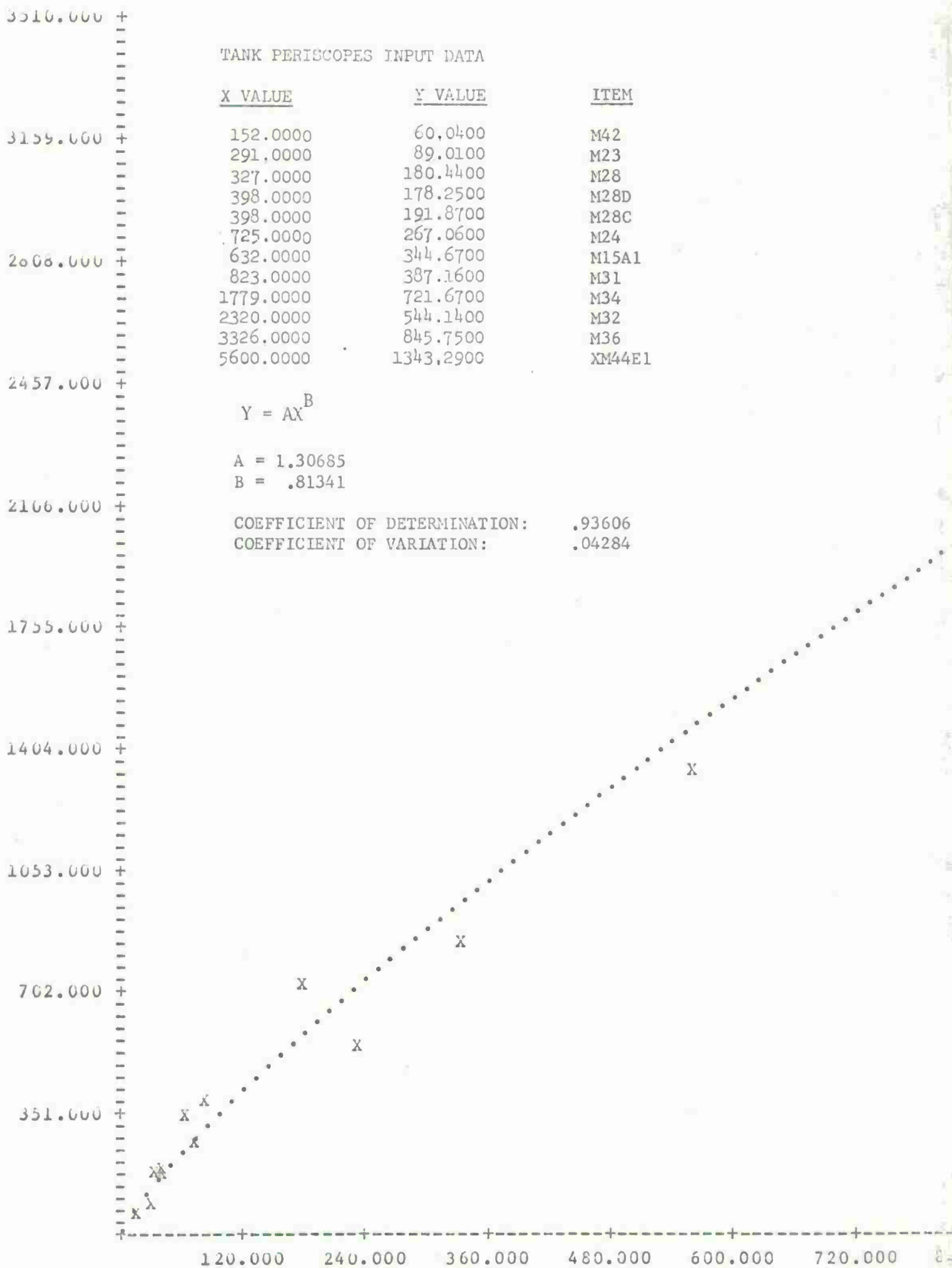
$$Y = AX^B$$

$$A = 1.30685$$

$$B = .81341$$

COEFFICIENT OF DETERMINATION: .93606

COEFFICIENT OF VARIATION: .04284



Y AXIS
Overhaul Cost

SIGHTS

SIGHTS INPUT DATA

	ITEM	X VALUE	Y VALUE
	Reflecting	63.2200	33.1800
	M4	164.0000	67.3000
	M44C	72.5500	75.8800
	M24C	508.0000	124.6100
	Infinity	202.0000	123.5200
	M34	258.0000	223.0000

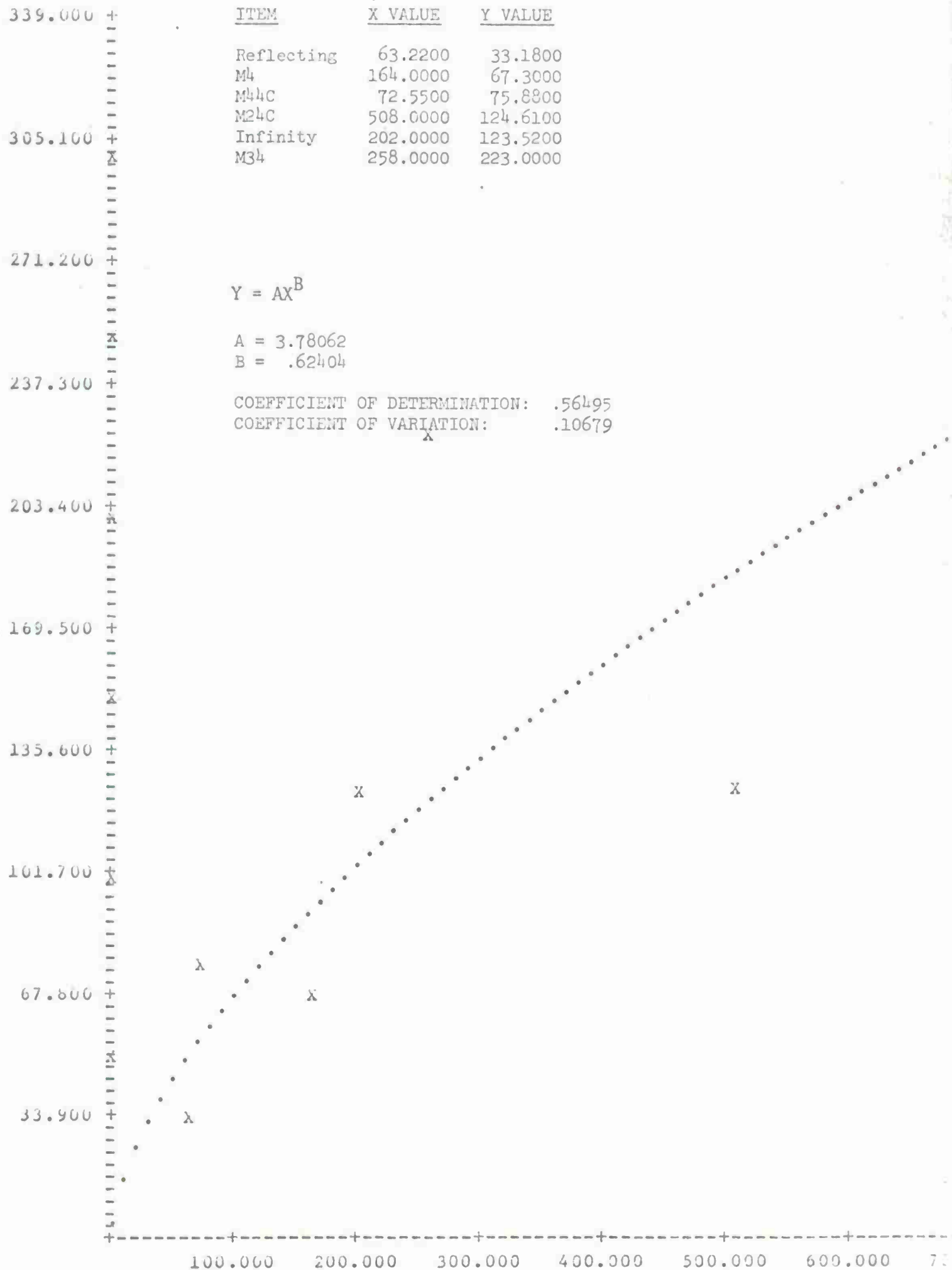
$Y = AX^B$

$A = 3.78062$

$B = .62404$

COEFFICIENT OF DETERMINATION: .56495

COEFFICIENT OF VARIATION: .10679



APPENDIX A

DEFINITIONS

Cyclic/Normal Overhaul/Rebuild (WAC Code A1) - To restore an item to a standard as nearly as possible to original or new condition in appearance, performance and life expectancy. This is accomplished through the maintenance technique of complete disassembly of the item, inspection of all parts or components, repair or replacement of worn or unserviceable elements using original manufacturing tolerances and specifications and subsequent reassembly of the item. Also includes the disassembly, testing, and inspecting of the operating components and the basic structure to determine and accomplish the necessary rework, replacement, and servicing required to obtain the desired performance and permit the return of an item to the supply system in accordance with maintenance standards established for each item of equipment (AR 750-1). Includes overhaul performed on site when such maintenance requires the skills, tools and equipment of depot maintenance personnel and facilities. Includes the overhaul/rebuild of equipment returned on a cyclic basis to depot maintenance activities based on hours of operation, mileage, or other established operational criteria, in addition to normal returns based on technical inspections. Includes rebuild only when approved by DA/DCSLOG.

Funded Parts - Army Stock Funded (ASF) Parts. ASF parts required for overhaul are charged to the project program.

Standard Price - A predetermined price established in accordance with prescribed criteria for each item in the Army supply system. See AR 735-7 for standard price objectives.

Unfunded Parts - PEMA (free issue) Parts. PEMA funded parts required for overhaul are not charged to the project program.

APPENDIX B

AVERAGE ANNUAL UNIT COST TO OVERHAUL
(EXCLUDING UNFUNDED PARTS COST) BY MAJOR ITEM IN
FY 75 DOLLARS

This appendix provides a historical summary by item by which assumptions can be made concerning future overhaul/rebuild costs. The following pages present the weighted average unit cost to overhaul excluding unfunded parts cost in FY 75 dollars by fiscal year for major items listed in Section II. Data are displayed in FSN numerical sequence.

ANNUAL AVERAGE UNIT COST (EXCLUDING UNFUNDED PARTS)
TO OVERHAUL IN FY 75 DOLLARS

	FSN	NOMENCLATURE	<u>FY 68</u>	<u>FY 69</u>	<u>FY 70</u>	<u>FY 71</u>	<u>FY 72</u>	<u>FY 73</u>	<u>FY 74</u>
1	1005-072-5011	M14A1 Rifle 7.62 MM	122.00	106.77	110.08	-	-	149.67	-
2	1005-073-9421	M16A1 Rifle 5.56 MM	-	-	-	-	73.12	78.09	94.05
3	1005-214-0934	S&W Revolver Cal 38	41.27	-	36.33	-	-	-	-
4	1005-317-2425	M36 Gun Mount	213.98	207.21	289.81	-	-	-	-
5	1005-317-2427	M36A1 Gun Mount	236.60	-	272.98	252.85	-	228.45	244.22
6	1005-317-2428	M36A2 Gun Mount	281.12	277.92	-	-	-	-	-
7	1005-317-2442	M31 C Pedestal Mount	-	118.09	146.46	-	-	133.03	-
8	1005-322-9715	M2 Machine Gun Cal 50 HB	171.78	149.22	-	-	-	181.57	189.32
9	1005-322-9716	M3 Tripod Mount Cal 50	93.13	-	143.21	117.91	-	121.74	-
10	1005-322-9718	M2 Tripod Mount Cal 30	59.70	57.86	122.55	56.45	-	-	68.53
11	1005-511-9042	M8C Spotting Rifle Cal 50	287.44	-	119.61	-	-	347.73	-
12	1005-589-1271	M14 Rifle 7.62 MM	46.70	72.72	45.91	-	-	31.73	50.56
13	1005-602-2105	M2 Machine Gun Cal 50 HB	196.91	-	-	-	-	122.72	103.54
14	1005-605-7710	M60 Machine Gun 7.62 MM	119.00	-	161.78	153.76	149.82	-	160.72
15	1005-606-8412	M2 Machine Gun Cal 50	86.09	135.20	210.99	-	-	-	-
16	1005-670-7670	M1 Carbine Cal 30	16.27	-	19.98	29.32	-	-	38.71
17	1005-670-7675	M2 Carbine Cal 30	34.68	33.11	-	36.29	-	-	34.36
18	1005-672-1643	M1919A4 Machine Gun Cal 30	159.18	103.21	-	-	-	95.75	120.94
19	1005-672-1649	M1919A6 Machine Gun Cal 30	166.16	-	189.49	-	-	-	-
20	1005-672-1771	M3A1 Submachinegun Cal 45	39.12	-	-	-	-	-	36.79

ANNUAL AVERAGE UNIT COST (EXCLUDING UNFUNDED PARTS)

TO OVERHAUL IN FY 75 DOLLARS

FSN	NOMENCLATURE	<u>FY 68</u>	<u>FY 69</u>	<u>FY 70</u>	<u>FY 71</u>	<u>FY 72</u>	<u>FY 73</u>	<u>FY 74</u>
21	1005-673-4750 M55 Machine Gun Mount	4882.27	-	-	-	-	-	-
22	1005-673-7965 M1911A1 Pistol	28.41	22.20	36.72	21.80	-	23.77	-
23	1005-674-1309 M1918A2 Rifle Cal 30	147.28	171.41	164.13	-	-	-	164.45
24	1005-674-1431 M1D Rifle Cal 30	231.13	218.09	-	102.15	-	-	-
25	1005-678-9828 M14NN Rifle 7.62 MM	424.85	-	153.08	145.26	-	265.98	236.04
26	1005-690-2790 M85 Machine Gun Cal 50	-	-	-	226.43	535.99	550.67	773.04
27	1005-693-4854 M2 Machine Gun	204.76	26.05	192.44	157.97	-	-	-
28	1005-704-6650 Machine Gun Mount	65.85	-	73.17	74.35	-	-	73.52
29	1005-710-5599 M122 Mount Tripod	96.25	89.36	70.22	96.51	102.84	127.88	105.48
30	1005-711-5031 M49 Ring Mount	91.40	-	137.84	-	-	-	-
31	1005-716-2946 M37 Machine Gun Cal 30	-	-	133.57	-	-	-	-
32	1005-726-5636 M2 Machine Gun Cal 50 HB	-	-	-	-	180.46	179.21	187.17
33	1005-726-5687 Revolver Cal 38	55.50	-	36.92	-	-	-	-
34	1005-726-5786 Revolver Cal 38	36.72	-	29.11	-	-	-	-
35	1005-736-4875 AA Mount Machine Gun	299.61	131.88	218.51	228.51	-	-	-
36	1005-834-6119 AA Mount Machine Gun	260.88	258.21	-	-	-	-	-
37	1005-836-7286 Machine Gun Mount	119.36	-	-	-	-	-	114.69
38	1005-840-3758 M13 Rifle Cal 22	29.42	29.24	-	-	-	-	-
39	1005-854-4463 M142 Mount Machine Gun	50.52	62.41	-	-	-	65.25	-
40	1005-869-8816 M73 Machine Gun 7.62 MM	486.98	445.06	-	341.33	343.02	-	-

PC

ANNUAL AVERAGE UNIT COST (EXCLUDING UNFUNDED PARTS)
TO OVERHAUL IN FY 75 DOLLARS

FSN	NOMENCLATURE	<u>FY 68</u>	<u>FY 69</u>	<u>FY 70</u>	<u>FY 71</u>	<u>FY 72</u>	<u>FY 73</u>	<u>FY 74</u>
41	1005-890-2610 M66 Ring Mount	-	-	-	325.37	-	-	-
42	1005-953-9073 M2 Armament Subsystem	1001.45	-	-	-	-	-	-
43	1005-957-3893 M2 Machine Gun Cal 50	-	-	-	144.21	-	-	-
44	1005-973-0375 M60C Machine Gun 7.62 MM	151.37	196.47	-	-	-	-	-
45	1005-999-8194 M27 Armament Subsystem	7024.54	-	-	-	-	-	-
46	1010-322-9737 M18 Recoilles Rifle 57 MM	-	-	-	325.12	374.79	356.28	-
47	1010-322-9739 M18A1 Recoilless Rifle 57 MM	-	280.39	327.87	384.72	328.20	401.32	-
48	1010-673-2006 M2 Mortar 60MM	-	-	287.58	180.11	251.71	238.52	309.43
49	1010-673-2010 M19 Mortar 60MM	-	-	-	262.42	-	-	283.09
50	1015-073-5367 M37 Recoil Mechanism	-	-	3120.42	3209.18	3411.21	3352.98	3365.49
51	1015-086-8164 M102 Howitzer 105MM	-	-	-	-	10342.27	13607.28	25941.48
52	1015-099-8248 M2A5 Recoil Mechanism	1923.54	-	1762.80	1943.53	1445.97	1982.28	1270.69
53	1015-099-8249 M2A4 Recoil Mechanism	2051.34	1498.91	1485.86	1578.59	1494.49	1468.00	1490.47
54	1015-133-8484 M40A2 Recoilless Rifle 106MM	-	-	-	-	984.54	1199.37	1150.58
55	1015-322-9720 M30 Mortar 107MM	749.65	-	-	524.45	-	-	-
56	1015-322-9742 M27A1 Rifle 105MM	-	-	-	-	-	-	1505.71
57	1015-322-9752 M101A1 Howitzer 105MM	4963.42	-	5872.69	6774.50	6387.41	7877.88	7663.61
58	1015-322-9768 M114A1 Howitzer 155MM	-	-	-	-	-	-	17855.33
59	1015-348-4923 M40A1 Recoilless Rifle 106MM	777.83	-	1157.59	-	-	-	-
60	1015-505-5285 Equilibrator	2614.82	-	2022.11	-	-	-	-

ANNUAL AVERAGE UNIT COST (EXCLUDING UNFUNDED PARTS)
TO OVERHAUL IN FY 75 DOLLARS

FSN	NOMENCLATURE	<u>FY 68</u>	<u>FY 69</u>	<u>FY 70</u>	<u>FY 71</u>	<u>FY 72</u>	<u>FY 73</u>	<u>FY 74</u>
01 1015-511-9124	M92 Recoilless Rifle Mount	609.93	-	718.59	-	-	-	-
02 1015-657-7534	M67 Recoilless Rifle 90MM	258.76	-	266.92	287.74	-	255.41	297.66
03 1015-691-1289	M20 Recoilless Rifle 75MM	-	-	-	315.66	-	-	313.02
04 1015-736-3974	M87 Mount	-	-	752.22	-	-	-	-
05 1015-840-1836	M29 Mortar 81MM	486.78	-	759.08	-	495.56	-	-
06 1025-050-8922	Equilibrator	1205.96	-	962.36	-	-	712.55	1619.49
07 1025-322-9755	M114 Howitzer 155MM	6949.02	-	11864.90	-	-	21690.29	16192.08
08 1025-322-9768	M114A1 Howitzer 155MM	8393.34	-	14629.64	12977.64	17695.28	-	-
09 1025-653-7593	Equilibrator	185.77	-	109.85	-	-	193.36	-
70 1025-713-3221	Equilibrator	647.39	-	847.66	-	-	-	-
71 1025-714-8074	M6A2 Recoil Mechanism	-	-	2767.10	2946.46	3525.84	3901.92	3682.18
72 1025-863-5613	M158 Mount Assembly	-	-	7202.72	-	7693.60	-	7484.73
73 1025-994-8931	M123A1 Howitzer 155MM	-	-	8357.94	11500.28	-	-	-
74 1030-322-9788	M115 Howitzer 8 in.	9543.84	-	7443.44	-	10126.76	-	18144.60
75 1030-714-1826	M4A1 Recoil Mechanism	-	-	-	-	5943.66	-	-
76 1055-840-1842	M20A1B1 Rocket Launcher 3.5 in.	-	-	69.78	-	-	-	-
77 1090-933-6701	M28 Armament Subsystem	-	-	-	-	16879.90	-	-
78 1220-344-4678	M13 Blastic Computer	466.32	-	-	-	-	-	-
79 1220-448-0131	M18 Gun Direction Computer	-	-	7983.88	7798.62	-	-	-
80 1220-546-9735	M13A1 Blastic Computer	565.72	-	396.17	-	-	-	-

ANNUAL AVERAGE UNIT COST (EXCLUDING UNFUNDED PARTS)
TO OVERHAUL IN FY 75 DOLLARS

FSN	NOMENCLATURE	<u>FY 68</u>	<u>FY 69</u>	<u>FY 70</u>	<u>FY 71</u>	<u>FY 72</u>	<u>FY 73</u>	<u>FY 74</u>
81	1220-572-8738 M16 Computer	-	-	931.23	-	-	-	-
82	1220-676-2182 M13A1D Blastic Computer	-	-	667.37	566.55	522.20	-	-
83	1220-766-5137 M38 Sight Computer	520.16	-	-	-	-	895.62	-
84	1220-766-5139 Computer Assy	-	349.03	683.57	790.35	-	-	-
85	1220-774-9445 M13A1C Ballistic Computer	387.75	-	487.88	-	-	-	-
86	1220-856-9454 M13A2 Ballistic Computer	-	455.30	525.14	400.96	546.46	-	-
87	1220-870-6274 M13B1C Ballistic Computer	367.80	357.83	-	520.40	390.79	482.45	-
88	1240-056-4854 Infinity Sight	-	-	-	138.10	107.45	-	-
89	1240-076-0066 M113 Panoramic Telescope	2278.58	-	953.44	987.66	1037.22	942.41	935.73
90	1240-300-6601 T150E1 Telescope	614.76	424.97	507.22	-	477.93	-	-
91	1240-300-7989 M34A2 Sight Unit	205.01	-	166.38	-	205.93	-	-
92	1240-344-4632 M12A7K Panoramic Telescope	214.59	177.74	-	200.28	-	-	346.28
93	1240-344-4633 M12A7H Panoramic Telescope	217.49	267.29	172.68	227.12	202.37	315.24	-
94	1240-344-4644 M23 Periscope	78.97	-	70.43	-	92.07	-	-
95	1240-344-4645 M20A1 Periscope	285.12	212.42	150.91	205.88	-	-	-
96	1240-344-4646 M97C Telescope	130.83	145.63	-	-	-	-	-
97	1240-344-4654 M13 Rangefinder	-	-	-	1125.09	-	-	-
98	1240-344-4668 M100 Panoramic Telescope	697.89	729.62	583.74	-	-	493.94	-
99	1240-344-4672 M93 Telescope	465.39	279.63	-	-	-	-	-
100	1240-344-4674 M99C Telescope	578.68	576.25	-	-	-	-	-

ANNUAL AVERAGE UNIT COST (EXCLUDING UNFUNDED PARTS)
TO OVERHAUL IN FY 75 DOLLARS

FSN	NOMENCLATURE	<u>FY 68</u>	<u>FY 69</u>	<u>FY 70</u>	<u>FY 71</u>	<u>FY 72</u>	<u>FY 73</u>	<u>FY 74</u>
101	1240-344-4680 M104A Periscope Mount	-	-	-	-	-	-	52.17
102	1240-346-8735 M28 Sight Periscope	174.93	-	-	-	-	-	-
103	1240-346-8184 M24 Tripod	-	-	-	-	-	45.19	-
104	1240-360-1593 M97 Telescope	-	191.32	188.82	215.62	-	-	-
105	1240-530-0974 M17A1 Binocular	-	-	-	-	-	-	169.45
106	1240-546-6339 M92D Elbow Telescope	-	-	68.78	65.38	-	73.47	-
107	1240-546-9580 M20A3 Periscope	241.99	162.39	197.85	-	314.85	-	-
108	1240-565-1091 M104 Periscope Mount	-	-	-	-	-	-	52.17
109	1240-601-4065 M90F Telescope	71.77	129.82	-	-	131.21	118.00	-
110	1240-608-2062 M13A1 Rangefinder	-	-	1138.70	1397.12	-	-	-
111	1240-654-3811 M15 Tripod Mount	-	-	28.79	-	-	-	-
112	1240-657-4387 M17 Tripod Mount	133.76	-	80.05	-	111.03	100.96	-
113	1240-670-2508 M13 + M13A1 Binocular	-	-	-	-	-	-	146.76
114	1240-670-2191 M3 Binocular	-	-	-	-	-	-	154.01
115	1240-676-2173 M17C Rangefinder	2048.04	910.90	1413.98	1364.18	1322.11	2168.02	1045.44
116	1240-676-2174 M31 Periscope	332.09	419.05	307.53	-	-	429.24	-
117	1240-676-2178 M105C Telescope	-	-	-	413.34	-	-	-
118	1240-676-2181 M44C Sight Infinity	64.51	58.20	62.91	66.57	59.83	84.27	89.65
119	1240-690-8811 Sight Bore	-	-	-	-	-	-	64.18
120	1240-706-0794 M28C Sight Periscope	175.04	204.58	208.43	-	-	-	-

ANNUAL AVERAGE UNIT COST (EXCLUDING UNFUNDED PARTS)
TO OVERHAUL IN FY 75 DOLLARS

FSN	NOMENCLATURE	<u>FY 68</u>	<u>FY 69</u>	<u>FY 70</u>	<u>FY 71</u>	<u>FY 72</u>	<u>FY 73</u>	<u>FY 74</u>
121	1240-716-2947 Sight Reflecting	19.77	-	32.79	-	-	-	-
122	1240-732-1470 M97G Telescope	-	-	-	-	-	-	233.67
123	1240-732-1469 M97H Telescope	178.20	205.37	200.06	186.98	-	-	-
124	1240-757-8441 M23 Telescope Mount	-	-	-	-	-	-	67.01
125	1240-757-9927 M4 Sight	-	-	62.71	-	-	80.12	80.49
126	1240-757-9933 M1 Panoramic Telescope	243.52	-	-	-	-	440.14	-
127	1240-757-9935 M12 Panoramic Telescope	-	-	-	203.66	297.47	-	-
128	1240-757-9975 M62 Elbow Telescope	74.54	68.92	92.55	-	-	64.74	-
129	1240-758-2078 Mount Telescope	-	-	-	-	-	-	339.77
130	1240-759-7757 M15A1 Periscope	326.54	215.42	-	-	334.61	-	-
131	1240-757-8596 Telescope Mount	-	-	-	-	-	-	373.17
132	1240-759-7774 M84 Telescope	54.82	-	41.78	-	-	-	-
133	1240-759-7781 M16A1D Elbow Telescope	130.88	-	105.53	101.51	103.27	-	103.34
134	1240-759-7782 M16A1E Elbow Telescope	-	-	-	131.07	136.58	-	115.12
135	1240-759-7783 M16A1G Elbow Telescope	-	-	-	-	89.92	-	-
136	1240-759-7852 M86F Telescope	105.90	78.93	112.02	93.56	26.86	-	28.72
137	1240-759-7853 M90D Telescope	95.34	-	-	92.99	88.40	29.77	-
138	1240-759-7854 M34 Sight Unit	267.29	297.76	181.64	202.71	-	-	-
139	1240-762-9333 M19 Articulated Telescope	-	-	-	321.24	-	-	-
140	1240-764-1667 M105 Articulated Telescope	313.77	-	283.43	-	-	323.15	-

ANNUAL AVERAGE UNIT COST (EXCLUDING UNFUNDED PARTS)
TO OVERHAUL IN FY 75 DOLLARS

FSN	NOMENCLATURE	<u>FY 68</u>	<u>FY 69</u>	<u>FY 70</u>	<u>FY 71</u>	<u>FY 72</u>	<u>FY 73</u>	<u>FY 74</u>
141	1240-764-7931 M34A1 Sight Unit	218.28	-	214.73	-	-	-	-
142	1240-764-8288 M24C Sight Unit	-	-	99.48	65.32	-	-	292.57
143	1240-764-8432 M90C Telescope	-	-	-	-	95.40	164.26	-
144	1240-765-2161 T17 Periscope Mount	-	-	-	-	-	-	154.84
145	1240-768-7260 M12A7C Panoramic Telescope	232.02	-	400.89	218.84	197.28	240.97	201.34
146	1240-768-7261 M12A7D Panoramic Telescope	-	-	-	182.38	-	-	278.53
147	1240-768-7263 M12A7F Panoramic Telescope	-	-	-	196.62	-	-	-
148	1240-777-6776 M104A2 Periscope Mount	-	-	-	-	-	-	51.42
149	1240-788-1236 M103 Telescope	-	85.75	80.66	91.68	87.93	-	141.06
150	1240-819-4519 M118 Elbow Telescope	498.70	-	655.28	-	617.29	702.30	-
151	1240-819-4520 M118C Elbow Telescope	637.84	671.98	-	-	-	745.00	-
152	1240-823-5613 M128E2 Telescope Mount	-	-	-	-	-	-	199.48
153	1240-824-3467 M62A1C Elbow Telescope	-	-	155.81	49.39	-	-	-
154	1240-863-5642 M17B1C Rangefinder	4396.14	3108.00	5142.07	1283.16	-	1216.89	-
155	1240-864-2930 M117 Panoramic Telescope	759.95	662.52	643.64	-	-	-	-
156	1240-864-2933 M42 Periscope	56.45	-	51.75	-	66.19	-	-
157	1240-875-7933 M17A1 Rangefinder	1686.55	-	1708.09	-	-	1351.10	-
158	1240-886-5888 M92F Elbow Telescope	100.14	-	-	95.35	87.10	-	-
159	1240-895-6492 Mount Telescope	-	-	-	-	-	-	573.60
160	1240-895-9186 M115 Panoramic Telescope	2926.76	-	1223.83	-	1343.24	923.63	1237.81

ANNUAL AVERAGE UNIT COST (EXCLUDING UNFUNDED PARTS)
TO OVERHAUL IN FY 75 DOLLARS

FSN	NOMENCLATURE	<u>FY 68</u>	<u>FY 69</u>	<u>FY 70</u>	<u>FY 71</u>	<u>FY 72</u>	<u>FY 73</u>	<u>FY 74</u>
161	1240-896-2240 XM1 Mount Telescope	-	-	-	-	-	-	91.81
162	1240-898-6787 M116 Elbow Telescope	117.94	125.37	154.62	-	78.24	115.45	-
163	1240-898-6789 M116C Elbow Telescope	-	64.20	118.96	-	-	103.39	100.94
164	1240-917-6428 M12A7Q Panoramic Telescope	291.56	-	199.92	184.67	166.92	108.07	-
165	1240-917-6433 M12A7S Panoramic Telescope	-	-	298.45	265.50	209.13	62.23	289.62
166	1240-924-5785 M103A1 Telescope	-	-	60.89	85.73	-	-	93.43
167	1240-933-5630 XM44E1 Periscope	-	-	-	-	1392.44	1480.54	-
168	1240-963-0839 M114 Elbow Telescope	2552.78	1438.69	778.11	468.93	-	458.72	-
169	1240-974-6432 M116F Elbow Telescope	-	-	-	96.19	-	119.92	-
170	1240-974-6433 M116D Elbow Telescope	-	-	-	108.07	-	-	-
171	1240-977-5586 M24 Rangefinder	-	-	2175.08	-	-	-	-
172	1240-980-1745 M105D Articulate Telescope	579.52	295.75	355.62	440.62	-	391.91	-
173	1240-980-9288 M32 Periscope	578.03	676.57	662.68	683.93	209.98	-	-
174	1240-980-9290 M34 Periscope	-	-	710.71	571.37	-	-	-
175	1240-980-9291 M36 Periscope	-	-	709.12	964.47	-	-	-
176	1240-990-1851 M28D Periscope	-	-	172.04	-	-	-	-
177	1290-346-8184 M24 Tripod Mount	63.03	53.59	42.33	-	41.19	-	-
178	1290-652-8560 M5 Tripod Mount	56.35	64.25	-	-	28.74	65.17	-
179	6650-344-4647 M24 Periscope	302.00	206.33	311.62	184.83	-	300.91	-
180	6650-530-0959 M15A1 Binocular	-	-	111.42	-	-	-	-

ANNUAL AVERAGE UNIT COST (EXCLUDING UNFUNDED PARTS)
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FSN	NOMENCLATURE	<u>FY 68</u>	<u>FY 69</u>	<u>FY 70</u>	<u>FY 71</u>	<u>FY 72</u>	<u>FY 73</u>	<u>FY 74</u>
101 6650-530-0960	M49 Observation Telescope	-	-	65.05	-	-	-	-
102 6650-530-0973	M13A1 Binocular	-	-	117.69	-	117.55	-	-
103 6650-530-0974	M17A1 Binocular	-	-	109.38	116.48	-	163.48	-
104 6650-670-2491	M3 Binocular	127.02	127.72	142.74	100.76	110.95	157.18	-
105 6650-670-2508	M13 Binocular	-	148.66	103.19	-	-	-	-
106 6650-670-2514	M16 Binocular	106.08	-	109.66	142.99	132.72	143.33	-
107 6650-670-5577	M65 BC Telescope	386.89	-	425.46	566.43	-	-	-
108 6650-762-9336	M48 Periscope	-	-	-	607.49	762.03	524.95	-
109 6650-765-2971	M19 Periscope	323.24	199.51	268.01	154.52	-	202.15	-
190 6650-788-5464	M47 Periscope	-	-	-	401.38	-	140.29	-
191 6650-863-5657	M18 Infrared Binocular	299.92	-	438.18	483.52	440.17	-	-

APPENDIX C

INFLATION/PRICE ESCALATION INDICES

All overhaul/rebuild costs have been adjusted to FY 75 dollars by using the following indices from HQ, WECOM Cost Analysis Study, "Inflation/Price Escalation Instructions for WECOM Cost Estimating (Revised Edition No. 4)," October 1974.

<u>FY</u>	<u>Composite Ord & Accessories</u>
68	1.60
69	1.52
70	1.40
71	1.31
72	1.24
73	1.18
74	1.11
*75	1.00

* Based on 11% increase as contained in ASD Memorandum 30 July 1974, subject: Major Program Acquisition Cost Estimates.

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